

## Patterns of Substance Use and Abuse in Inner-City Adolescent Medical Patients

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Distinct patterns of use and abuse of alcohol and illicit drugs are described in a sample of 2,415 teenage patients using primary health clinics over a two-year period. The sample was obtained in the course of a large-scale study to evaluate the effectiveness of consolidated medical programs directed to predominantly inner-city, minority-group adolescents. Information was obtained in personal interviews using a structured format and professional interviewers. Analysis of data proceeded in two steps. First, the rates of progression from abstinence or light use of alcohol and drugs to regular use or abuse, and the reverse of this pattern (i.e., remission) were examined. The second step in the analysis was to examine the degree to which certain psychosocial variables characterized temporal patterns of heavy use. Regular tobacco use had a substantial influence on the progression to substance abuse in male and female patients. The results indicate that about 20 percent of the patients attending these clinics were in some phase of either increasing or decreasing their substance use, and another 20 percent engaged in regular use continuously over the two-year period, while the remaining 60 percent of patients stayed at low risk over this same period. These subgroups were rather easy to differentiate on the basis of concurrent behavioral and lifestyle problems.

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Characterization of the broad picture of substance use and abuse among adolescents is a social and medical problem in need of continuing reappraisal. From a clinical perspective, the problem absorbs a significant proportion of the health care needs of adolescents and, from a public health vantage, the proportion of youths at risk for substance abuse absorbs a considerable amount of attention from those responsible for the education and rearing of teenagers. But adolescence, by its nature, is a time to experiment with lifestyle orientations. Assessing the full significance of any deviant behavior is dependent on a longitudinal picture of change and stability in this developmental period [1]. If transient or non-serious users make up a sizable proportion of all youths using alcohol and drugs, then the prevalence of the problem may be easily overstated, with the unfortunate consequence that resources are either wasted or shifted to other priorities of more limited scope.

In a previous paper we examined the correlates of substance abuse in a cross-sectional sample of teenage patients using primary health care facilities [2]. A strong, linear relationship was found between several physical health and psychosocial variables and varying levels of use and abuse of substances. In this paper, patterns of use and abuse of tobacco, alcohol, and illicit drugs in this same group of young patients is characterized over a two-year interval and the association between these patterns and other social and behavioral problems examined. The expectation is that a high degree of change will be found within this sample and that persistent users will be in

the minority. Furthermore, we expect that stable and transient users will not be difficult to discriminate on a number of different correlates.

## METHODS

Between 1984 and 1986, over 2,700 teenage medical patients attending various consolidated and traditional health clinics were interviewed at two points in time separated by a 12-month interval. The study was part of the evaluation of a large effort sponsored by the Robert Wood Johnson Foundation to improve health services for youths at high risk for violent deaths, early pregnancy, sexually transmitted disease, and alcohol and drug abuse [3].

The sample was derived from ten programs located throughout the country. Seven of the programs had received funds to consolidate health care for adolescents, and three were traditional programs that provided care for all age groups. The consolidated programs were located in Boston; New Haven; Indianapolis; Chicago; Jackson, Mississippi; Dallas; and Los Angeles, and the traditional clinics in Buffalo, St. Louis, and New Orleans. Three of the consolidated programs included school-based clinics, but all of the other clinics were either community- or hospital-based. Between 131 and 376 13- to 18-year-olds were personally interviewed at each site (the number depended on the volume of patient visits during a six-month period in 1984). Only 3.6 percent of youths selected for interview refused to participate. Of the 2,788 youths interviewed at Wave 1, 2,415 (87 percent) were successfully reinterviewed at Wave 2.

The interviews used in this study were fully structured protocols designed to assess comprehensively the home environment, family history, school adjustment, peer relationships, physical and mental health, and reasons for seeking health care of each youth. On average, each interview took 50 minutes to complete and was administered by trained professional interviewers. Pertinent to this paper are sections of the interview dealing with mental health characteristics. Questions used to elicit symptoms of alcohol abuse and dependence, drug abuse and dependence, tobacco dependence, and depression were taken from the National Institute of Mental Health's Diagnostic Interview Schedule (DIS) [4]. Frequency of use of tobacco, alcohol, and drugs was also obtained in this part of the interview. Questions used to elicit symptoms of conduct disorder were taken from the Diagnostic Interview for Children and Adolescents (DICA) [5]. For each symptom, the respondent was asked to date its first and last occurrence. The time period of interest in this analysis is a 24-month period, defined as the 12-month interval preceding each of the two interviews. The definitions included in Table 1 characterize the types of questions asked and criteria used for variables included in the main analysis of this study.

The definitions of abuse and dependence are based on criteria, established by the American Psychiatric Association, which are described in the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition* (1980) [6]. The regular-use category is aimed at describing a group in an intermediate position between those who either abstain or use alcohol infrequently and in modest amounts, and those who have experienced psychosocial or medical problems as a result of substance use. The definitions have been used in surveys of psychiatric disorder in the general population of adults [7], and in samples of college students [8]. A second-order classification was devised to capture patterns of use over the two-year period, and these patterns are shown in Table 2. When it appears in the text that follows, the phrase "substance use" refers to the use of alcohol or illicit drugs either singly or in combination.

TABLE 1  
Definition and Classification of Substance Use Categories

Definition	Classification
Smoked cigarettes, cigars, or pipes, chewed tobacco, or used snuff every day for a month or more	Regular tobacco use
Drinking at least once a month, drinking two or more glasses/drinks at one time, and being drunk at least once	Regular alcohol use
Two or more of the following due to drinking: family objections, feeling user had to have a drink every day, needing to drink more to feel good, missing or been sent home from school or work, trouble driving, physical fights, and involvement with police	Alcohol abuse
Alcohol abuse plus drinking for a couple of days without sobering up, forgetting what user had done or said the night before, or feeling sick after cutting down	Alcohol dependency
Using any drug one or more times a month or almost every day for a month or more	Regular drug use
Regular drug use and needing larger amounts for an effect, feeling sick when cutting down, problems with family, or emotional problems	Drug dependency

## RESULTS

A profile of the age, sex, and race characteristics of the sample is important to examine because the individuals represent a select group of inner-city youths who are using primary health care facilities. As shown in Table 3, female patients predominate, representing over three-quarters of all patients, and black females, in particular, represent over half of all patients. Within the age range of 13 to 18, there were slightly more younger patients (13- to 16-year-olds) than older ones (17- to 18-year-olds).

Table 4 illustrates the important distinction between substance users and abusers so far as rates are concerned. Among both males and females, regular drug use is two to three times more frequent than drug dependency and for regular alcohol use and abuse the discrepancy is even larger. An interesting result is shown in the pattern of sex differences. While females were involved in more regular use of tobacco than males, males had higher rates of regular alcohol use. Sex differences in rates of alcohol abuse and dependence and regular drug use and dependence were less striking.

TABLE 2  
Definition of Patterns of Substance Use over a Two-Year Period

Definition	Pattern
No alcohol or drug use in the 12 months preceding either interview; or drinking less than once a month, not drinking two or more drinks at one time, and never drunk; no drug use	Abstainers/Low Users
Regular alcohol or drug use in the 12 months preceding both interviews	Continuers
Regular alcohol or drug use in the 12 months preceding the first interview (Wave 1) but not in the 12 months preceding the second interview (Wave 2)	Remitters
Regular alcohol or drug use in the 12 months preceding the second interview (Wave 2) but not in the 12 months preceding the first interview (Wave 1)	Progressors

TABLE 3  
Proportion of Youths Interviewed at Waves 1 and 2 by Race-Sex-Age Group

Race-Sex-Age Group	Number Interviewed at Wave 1	Number and Percentage Reinterviewed at Wave 2	
		<i>n</i>	(%)
Black female, 13-16	808	732	(30)
Black female, 17-18	692	615	(26)
Non-Black female, 13-16	359	293	(12)
Non-Black female, 17-18	292	238	(10)
All females	2,151	1,878	(78)
Black male, 13-16	252	226	(9)
Black male, 17-18	224	193	(8)
Non-Black male, 13-16	99	77	(3)
Non-Black male, 17-18	62	41	(2)
All males	637	537	(22)
Total	2,788	2,415	(100)

As a first step toward investigating patterns of progression, the effect of regular tobacco and substance use at Wave 1 on the development of substance abuse/dependence at Wave 2 was examined. Twenty-two percent of regular tobacco users progressed to abuse or dependence over the 12-month interval compared to 12 percent of those who did not use tobacco. Abstainers/light users at Wave 1 were much less likely to abuse or become dependent on substances regardless of whether they used tobacco or not; 3 percent who used tobacco became abusers, and 2 percent who did not use tobacco became abusers. The influence of tobacco use on the rate of progression to abuse or dependence was most evident for males. In this group, tobacco use increased the likelihood of becoming abusive or dependent by a factor of three; 41 percent of the tobacco users became abusers, compared to 14 percent of the non-users of tobacco. This finding supports the concept that progression to a pathological level of use is a stage-like process in which few teenagers become dependent on substances who have

TABLE 4  
Frequency of Regular Tobacco Use and the Use, Abuse, and Dependence on Alcohol and Drugs  
in Adolescent Medical Patients at Wave 1 and Wave 2

Substances	Males ( <i>n</i> = 537)				Females ( <i>n</i> = 1,878)				Total ( <i>n</i> = 2,415)			
	W1		W2		W1		W2		W1		W2	
	<i>f</i>	(%)	<i>f</i>	(%)	<i>f</i>	(%)	<i>f</i>	(%)	<i>f</i>	(%)	<i>f</i>	(%)
Regular tobacco use	74	(14)	107	(20)	506	(27)	526	(28)	580	(24)	633	(26)
Regular alcohol use	161	(30)	209	(39)	413	(22)	469	(25)	574	(24)	678	(28)
Regular drug use	91	(17)	113	(21)	263	(14)	281	(15)	354	(15)	394	(17)
Alcohol abuse	16	(3)	21	(4)	37	(2)	37	(2)	53	(2)	58	(2)
Alcohol dependency	5	(1)	16	(3)	18	(1)	18	(1)	23	(1)	32	(1)
Drug dependency	37	(7)	38	(7)	112	(6)	75	(4)	149	(6)	113	(5)

TABLE 5  
Sex and Age Differences in Temporal Patterns of Substance Use/Abuse  
(in percentages)

Temporal Pattern	Males		Females		Total		Age
	f	(%)	f	(%)	f	(%)	
Continuers	141	(26)	340	(18)	481	(20)	16.5
Progressors	90	(17)	211	(11)	301	(12)	16.2
Remitters	36	(7)	169	(9)	205	(8)	16.5
Abstainers/Light Users	270	(50)	1,158	(62)	1,428	(59)	15.9
X <sup>2</sup> (df = 3) = 35.90, $p < .0001$ , when testing for sex differences							F = 30.72, $p < .0001$ , when testing for age differences

not already engaged in a pattern of regular use of tobacco, alcohol, and drugs for a period of time.

Desisting from a pattern of substance abuse over the same period was also influenced by tobacco use. Among those who were regular substance users at Wave 1, one-fifth of males and one-third of females had become low users or abstainers by the second interview. As expected, those who were already abusing or were dependent on alcohol or drugs were less likely to remit than regular users. For both sexes, non-use of tobacco nearly doubled the rate of remission.

The second step in characterizing the 24-month pattern of regular substance use and abuse was to devise a classificatory scheme that would capture the various patterns of use. Table 5 shows the number and percentages of male and female youths who were grouped into these four classes. The majority of youths were classified either as abstainers/low users (59 percent) or continuers (20 percent). This latter group of continuers was made up of regular users and those who either abused or were dependent on substances. Combining these two groups was based on the assumption that those with a persistent pattern of use will remain at a high risk for abuse or dependence in subsequent years. The group of continuers also included those who had gone from being abusers or dependent at Wave 1 to regular users at Wave 2. Twelve percent of the youths progressed from non-use to a pattern of abuse or dependence. The number of those moving from the regular use or abuser/dependent group to abstention/low-use (i.e., remitters) was smaller than the group of progressors. The percentage of youths grouped into these four classes did differ by sex (chi-square = 35.9,  $df = 3$ ,  $p < .0001$ ). Specifically, males were more likely than females to be continuers and progressors, while females were more likely to be abstainers or low users. Abstainers/low-users were on average about six months younger than continuers and remitters, a statistically significant difference, given the large sample size. This fact suggests that some members may yet initiate a pattern of regular substance use.

To test the usefulness of this classificatory scheme, four correlates were examined: regular tobacco use, three or more depressive symptoms, three or more conduct problems, and legal problems. The associations between the classificatory scheme and the four correlates were separately examined in Wave 1 and Wave 2 data. All eight chi-square tests were highly significant, and all showed similar patterns. For each



psychosocial problem at each wave, those most likely to have the specific problem were the continuers and those least likely were the abstainers/low users. Progressors and remitters always fell in between. Table 6 shows that those youths with a persistent pattern of regular substance use or abuse/dependence were three to four times more likely to have had a legal problem (defined as police arrests, jailed, fines, court appearances) than abstainers/low-users at the Wave 1 interview, and their higher likelihood of having subsequent legal problems in the 12-month interval between Wave 1 and 2 interviews persisted. The frequency of legal problems among those showing the patterns of progression and remission was also elevated compared to abstainers/low-users, but not as strikingly as for the continuers. As predicted, the rank order of the pattern changes, with remitters having a higher rate than progressors at Wave 1 and progressors having a higher rate at Wave 2.

The relationship between conduct disorder symptoms (such as fighting, stealing, truancy, and property destruction) and the substance use patterns reveals a large difference between continuers and abstainers/low-users, with the positioning of progressors and remitters again falling in intermediate levels between these two groups.

While a strong association between substance use and conduct symptoms was expected based on numerous studies [9–12], the strength of association between substance use and depressive symptoms was less certain. Table 6 shows that the prevalence of multiple depressive symptoms was much more common in this sample of adolescents than multiple conduct symptoms. Again, the rate of symptoms in continuers was twice as high as in abstainers/low-users, with progressors and remitters occupying intermediate positions. This strong association between depression and substance abuse has been shown in a previous study of this same sample [2] and in a recent study of college students [8].

An even more striking difference exists in the rate of tobacco use in the four groups. Continuers were five to six times more likely to be regular tobacco users than those who did not drink or use drugs regularly. What is particularly interesting in Table 6 is the decrease in tobacco use from Wave 1 to Wave 2 among remitters and the increase in tobacco use among progressors.

It should be pointed out that a significant degree of overlap existed between all possible pairs of the four correlates shown in Table 6 (using the chi-square statistic), indicating the existence of a higher than expected probability that a youth with one of these problems might have another one. In the total sample, however, 53 percent of the patients had none of the four problems, 31 percent had one, 12 percent had two, 3 percent had three, and only 1 percent had all four.

Since all subjects in this study were attending primary health care centers at the time of the Wave 1 interview, it is possible that treatment effects may have contributed to the results. Though the prevalence of substance abuse was 11.5 percent among clinic users, only about a quarter of these youths stated that they had sought care for this problem in the year prior to the Wave 1 interview [13]. Among those who did seek treatment, very few indicated that they had visited the clinic more than once for this problem. It is unlikely, then, that the interventions provided had much effect on changes reported here. This topic is reported on in greater detail elsewhere [14].

## DISCUSSION

In this group of predominantly black and female inner-city teenage medical patients, the majority of the sample showed stable behavior with regard to substance

use and abuse over a two-year period. Over half the youths remained abstainers or low users of alcohol and drugs, and one-fifth were persistent regular users. Smaller numbers either progressed to or relinquished membership in this latter group.

In classifying youths into abstainers/low-users and the three groups of users, those most likely to be considered experimenters are the remitters. Although many in the group of abstainers/low-users admitted to occasionally having had a drink or using marijuana, their use was associated with low rates of antisocial behavior, depressive symptoms, and smoking. The decision to desist from alcohol and drug use in remitters was paralleled by other improvements in their mental health adjustment. By the same token, those who were initiating a pattern of regular and sustained use or abuse of alcohol or drugs showed clear evidence of approaching the level of deviance shown by continuous users. Both age and sex have some influence on being a regular user or abuser, but these background factors do not significantly diminish the relationships between regular use or abuse and mental health and psychosocial problems.

Based on these results, discrimination between cases and non-cases should be a function of evaluating the pattern of alcohol and drug use and its correlates over short intervals of time. During adolescence, one of the most important domains of health promotion has become the capacity to influence attitudes and behavior toward the use of tobacco, alcohol, and drugs [15]. The data presented here indicate that sex differences in substance use may be less prominent in adolescents than they are in adults. Females have somewhat higher rates of tobacco use than males, and males have higher rates of regular drinking. If there is a secular trend for the sexes to become more similar in patterns of use, the rates of drinking should continue to converge. In fact, a fair degree of convergence between the sexes has already occurred in rates of drug use and abuse. More attention should be given to patterns of initiation into substance use among adolescent males and females in order for health promotional interventions to be most effective.

The results of this study must be interpreted within the limits imposed by restricting the sample to disadvantaged and largely female primary care patients. It might be assumed that this group is at higher risk than the general population for substance abuse since they are already involved in help-seeking. Nevertheless, the rates of substance use and abuse were not higher than have been reported in a national probability sample of high school seniors, nor in samples of high school students from local areas or samples of middle-class adolescent patients [16–19]. Comparing the results of our study with these others suggests that the rates of substance use we found may be relatively low because of the large number of females and blacks making up the sample. All the studies show lower rates of alcohol and drug use in females across all social classes, and there is evidence that rates in black adolescents, especially black females, are lower than rates in whites [18].

Since prenatal care constituted one of the more frequent reasons that females used these services, it might also be assumed that rates of use among this group were low and that this might also be a way of biasing the sample. We found, however, that rates of substance use among pregnant girls did not differ from sexually active girls who were not pregnant [20]. It is also probable that these health services were not reaching a sector of the population who were at the highest risk for deviant behavior (e.g., unemployed males who were school dropouts). A second limitation concerns our reliance on self-report data. Although more work is needed to confirm the accuracy of adolescent self-reports about risk-taking behaviors of all types, some data do exist to



indicate that self-reported marijuana use is supported at a high level of agreement by urine tests [21].

While the results are not generalizable to the general population, they do suggest that approximately one-third of youths using primary care clinics are likely to be involved in regular substance use, and that most youngsters in this group remain persistent users over a two-year period. This persistent pattern of use can be readily identified as one component of a larger set of mental health and psychosocial problems. How much help they need and whether or not the help given should be focused on their substance use remain open questions, especially since few of those identified in the research interviews were being recognized and treated [13,14,22]. The approach to classification adopted in this study should help in identifying cases in need of treatment during a developmental period when lifestyle orientations are still being formed and when patterns of substance use are still believed to be more modifiable than they are in adults.

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